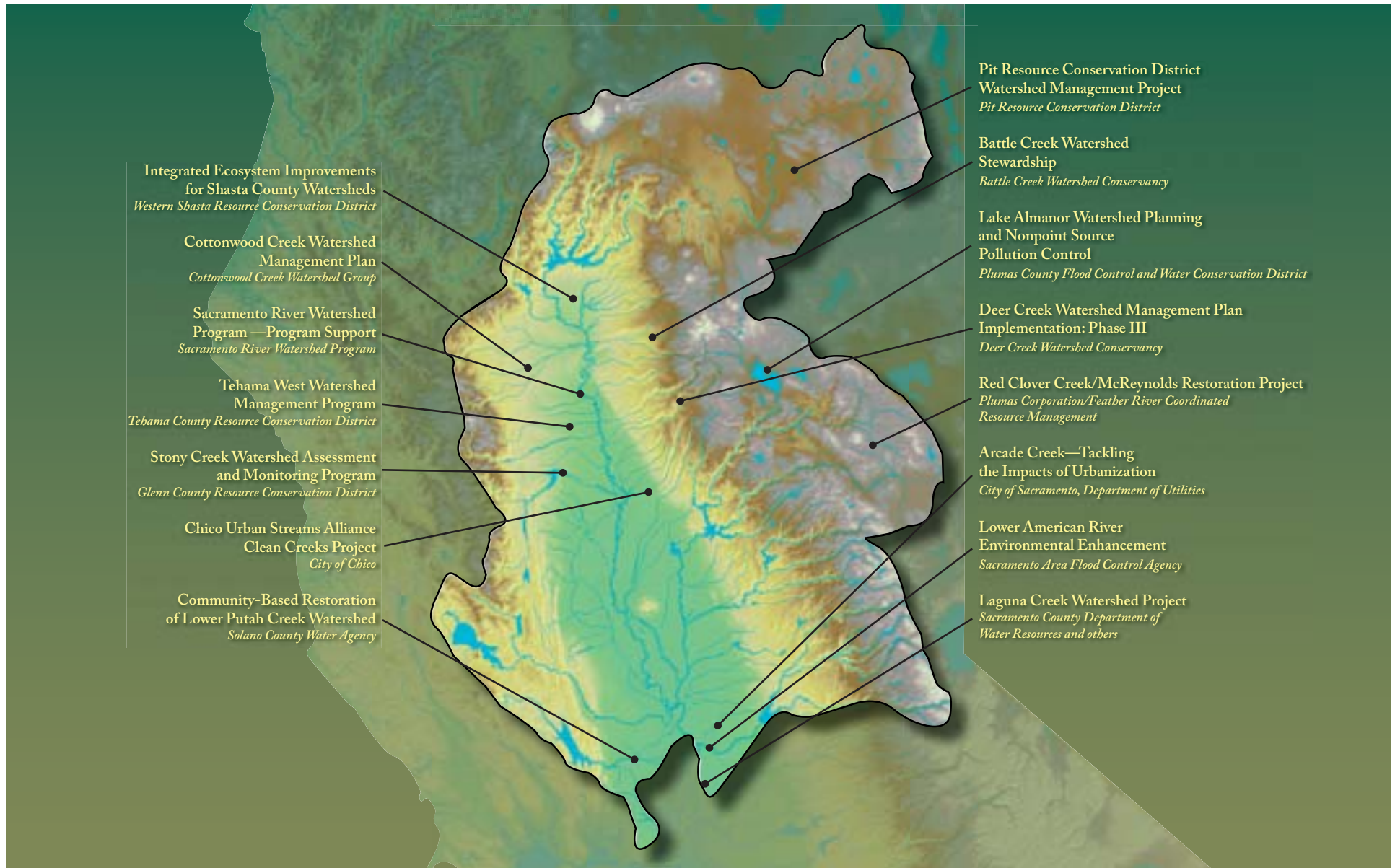


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## ARCADE CREEK—TACKLING THE IMPACTS OF URBANIZATION

City of Sacramento, Department of Utilities



Site of the planned Del Paso Park Detention/Filtration Wetland, which will treat the stormwater runoff from this outfall.

### PURPOSE

Expand the planning process for the Arcade Creek watershed and implement restoration activities

### PROJECT GOALS

- ✧ Increase participation of local residents in the Arcade Creek Watershed Group through public outreach and education
- ✧ Perform in-depth watershed assessment to provide information baseline
- ✧ Develop plan to manage and/or eliminate nonnative invasive plants
- ✧ Construct a stormwater runoff detention basin and filtration wetland for multiple benefits

### AWARD AMOUNT

\$930,000

### WATERSHED

Arcade Creek Watershed

### COUNTY

Sacramento County

### CALFED REGION

Sacramento Valley Region

### LEGISLATIVE DISTRICTS

US Congress: 3, 4, and 5; State Assembly: 4, 5, and 9;  
State Senate: 1 and 6

### *Benefits to the Bay-Delta System*

The Arcade Creek watershed is located within the city of Citrus Heights and unincorporated areas of Sacramento County. The watershed is a major source of polluted urban runoff to the Bay-Delta system. The Arcade Creek project raises public awareness and understanding of watershed health issues and improves collaboration among local residents and government agencies. The project will expand the planning process through increased public participation in the development of a watershed assessment. By eradicating invasive plants and restoring native riparian vegetation, the project will benefit local aquatic, terrestrial, and bird species, and migratory birds and mammals. The construction of a detention/filtration wetland as part of this project will also improve water quality in Arcade Creek that will benefit water users downstream in the Bay-Delta system. Local residents and local governments are primary beneficiaries of the improved natural environment, enhanced recreational opportunities, and improved water quality.

## PROJECT OVERVIEW

Arcade Creek watershed is located in Sacramento County, mostly within the city of Citrus Heights and unincorporated areas of Sacramento County. The watershed drains approximately 38 square miles of mostly commercial and residential neighborhoods. It is a major source of urban runoff to the Bay-Delta system. The Arcade Creek Watershed Group was formed in 2002 with support from the City of Sacramento and from the US Environmental Protection Agency. Members include city and county agency representatives and local residents. The group is working to improve water quality, reduce flood damage, enhance habitat, increase recreational opportunities, and encourage local participation in protection efforts within the Arcade Creek watershed.

This project implements priority tasks identified in previous assessment, planning, and outreach efforts. A watershed coordinator will help to increase support and involvement from homeowners and local residents by facilitating the watershed group, conducting field trips, and seeking public input. The project will increase public awareness about the effects of landscape maintenance chemicals on stream water quality and educate the community about the use of environmental restoration to treat urban runoff. The construction of the Del Paso Park Detention/Filtration Wetland will be used to demonstrate the value of environmental restoration. The wetland restoration will improve the flood-carrying capacity of Arcade Creek through moderate-sized storms, protect streambanks from excess erosion, enhance habitat, and improve downstream water quality through the detention and treatment of urban stormwater runoff. Furthermore, the Phase II Watershed Plan and the Invasive Species Eradication and Management Plan will be developed in concert to provide better information about the watershed in order to improve and protect its long-term health. Together, the plans will improve watershed planning efforts, prioritize several watershed improvement projects, and enhance riparian and aquatic habitat. The plans will be developed by the Arcade Creek Watershed Group, local residents and neighbors, the cities of Citrus Heights and Sacramento, and the County of Sacramento.



*This thicket of Arundo donax on Arcade Creek highlights the need for a nonnative invasive species management plan.*

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*North Fork of Battle Creek.*

## PURPOSE

Increase protection, implement restoration of stream conditions, and build capacity for landowners and resource agencies to manage watershed restoration efforts

## PROJECT GOALS

- ✧ Continue to implement the Battle Creek Watershed Conservancy's Watershed Strategy and evaluate outcomes of previously implemented projects
- ✧ Implement and monitor erosion reduction actions and restore riparian areas in the watershed
- ✧ Design and implement a stream condition monitoring plan and a water quality monitoring program
- ✧ Provide community outreach and training about watershed processes, protection needs, and restoration opportunities

### AWARD AMOUNT

\$680,380

### WATERSHED

Battle Creek Watershed

### COUNTY

Shasta and Tehama Counties

### CALFED REGION

Sacramento Valley Region

### LEGISLATIVE DISTRICTS

US Congress: 2 and 3, State Assembly: 2, State Senate: 4

### *Benefits to the Bay-Delta System*

The Battle Creek watershed is located on the southwestern slopes of Mt. Lassen and drains to the Sacramento River. Battle Creek is historically one of the most important Chinook salmon and steelhead spawning streams in the Sacramento Valley. This project is helping to reduce or eliminate sediment sources that degrade anadromous fish habitat in Battle Creek. Integral to the project are community outreach programs that educate local watershed residents and children about how to protect and restore habitat in the Battle Creek watershed. This project will also develop and implement a stream conditions monitoring plan based on protocols used by state and federal agencies. The resulting data will be made available to other public interests to aid in similar efforts. This project provides direct benefits to landowners and water users in the watershed and water users of the Central Valley Project. Local, state, and federal agencies, including the Lassen National Forest, will benefit from their investments in this project.

## PROJECT OVERVIEW

The Battle Creek watershed is situated on the volcanic slopes of Mt. Lassen in southeastern Shasta and northeastern Tehama Counties and covers approximately 360 square miles. Battle Creek flows from the foothills of Mt. Lassen, enters the Sacramento River southeast of the town of Cottonwood in Shasta County, and drains to the Bay-Delta. The Battle Creek watershed is widely recognized as a watershed critical to the survival and restoration of Chinook salmon and steelhead populations listed under the federal and state Endangered Species Acts.

The Battle Creek Watershed Conservancy (BCWC) is implementing the Battle Creek Watershed Stewardship project in partnership with the Lassen National Forest. Two independent scientific assessments of Battle Creek conducted by the BCWC and Lassen National Forest have indicated that stream conditions may be negatively affected by increased erosion and sedimentation in the upper Battle Creek watershed, which could impair water quality and reduce salmonid spawning success. These assessments have identified a need to increase protection and implement restoration of stream conditions, especially the stabilization or elimination of sediment sources that could further degrade anadromous fish habitat in Battle Creek.

The BCWC project has four components: evaluating the effectiveness of previous restoration investments in Battle Creek; continuing the implementation of the Battle Creek Watershed Strategy, which includes sponsoring watershed landowners and resources agencies in community education and outreach programs; identifying and eliminating significant sediment sources that are degrading the Battle Creek watershed; and designing and implementing a stream condition monitoring plan.



*Riparian corridor along Battle Creek.*

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# CHICO URBAN STREAMS ALLIANCE CLEAN CREEKS PROJECT

City of Chico



*Little Chico Creek flowing through Chapmantown.*

## PURPOSE

Conduct a community-based water quality and habitat assessment of Big Chico Creek and Little Chico Creek watersheds

## PROJECT GOALS

- ❖ Increase the awareness and understanding of urban runoff problems and solutions by the public, particularly Chico area residents
- ❖ Enhance volunteer participation in stream assessment programs
- ❖ Assess the performance of water quality management practices used in the City of Chico
- ❖ Improve migration, spawning, and rearing habitat for multiple fish species in Big Chico and Little Chico Creeks
- ❖ Increase recreational opportunities on Little Chico Creek

## AWARD AMOUNT

\$400,714

## WATERSHED

Big Chico Creek and Little Chico Creek Watersheds

## COUNTY

Butte County

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

## *Benefits to the Bay-Delta System*

Big Chico Creek and Little Chico Creek flow through the City of Chico and discharge into the Sacramento River and ultimately the Bay-Delta. The quality of the creeks' water and habitat for multiple fish species is impaired by urban runoff pollutants, including sediments, pathogens, and trash. This project will conduct a community-based water quality and habitat assessment of the Big Chico and Little Chico Creek watersheds. The project will also increase public awareness and involvement in order to better manage urban runoff problems. Extensive public outreach, education, and volunteer monitoring efforts will provide direct benefits to the City of Chico and its citizens. Decreased pollutant loads benefit surface water users, locally and downstream, by improving Delta source water quality. The project provides multiple benefits to the general public by increasing salmonid populations and by improving the drinking water quality of the Bay-Delta system. This project also benefits recreational users of the creeks by increasing the safety of water contact sports and improving habitat conditions for fish.

## PROJECT OVERVIEW

Big Chico and Little Chico Creeks are tributaries to the Sacramento River near the city of Chico. Water quality is good for the creeks upstream of the Chico urban area, but downstream water quality has been impaired by pathogens, sediments, trash, and other runoff pollutants from the urban areas. Big Chico and Little Chico Creeks provide migration, spawning, and rearing habitat for several fish species, including steelhead and winter-, spring- and fall- run Chinook salmon. Pollutants from the urban area affect the quality of these habitats and also affect the water quality of the Sacramento River and the Bay-Delta. The pathogens discharged into Little Chico Creek have also compromised the recreational use of the creek near the low-income community of Chapmantown.

Several organizations, including the City of Chico, the Big Chico Creek Watershed Alliance, the Butte Environmental Council, and Kennedy/Jenks Consultants, are working together as the Chico Urban Streams Alliance (Chico USA) to reduce impairment to Big Chico and Little Chico Creeks' water quality and habitat. Chico USA is evaluating public knowledge about urban runoff pollution as part of a large public outreach campaign. The outreach campaign also includes public service announcements, presentation booths at multiple events, brochures, billboards, posters, and one-on-one outreach with businesses that have potential to pollute the creeks. The project will increase public knowledge about urban runoff characteristics to encourage public willingness to implement water quality management practices and reduce urban runoff pollutant input to the creeks. The project also establishes a Creek Watch Hotline to provide information to the public on water quality regulation, urban runoff pollution prevention, and violation reporting. Voluntary citizen participation in water quality monitoring programs for the creeks is increasing as a result of the project.



*Big Chico Creek at the Chico city limits.*

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# COMMUNITY-BASED RESTORATION OF LOWER PUTAH CREEK WATERSHED

*Solano County Water Agency*



*Ken Davis leads a citizen monitoring event focused on aquatic invertebrates.*

## PURPOSE

Restore fish and wildlife habitat and water quality in the Lower Putah Creek watershed balancing science-based and stakeholder-focused approaches

## PROJECT GOALS

- ✿ Increase community stewardship and awareness of natural resources
- ✿ Improve watershed partner and stakeholder collaboration
- ✿ Improve habitat restoration monitoring and implementation practices
- ✿ Prepare a project assessment and evaluation plan
- ✿ Prepare a watershed action management plan

## AWARD AMOUNT

\$992,236

## WATERSHED

Putah Creek Watershed

## COUNTY

Solano County

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 1 and 3; State Assembly: 2, 7, and 8;  
State Senate: 2 and 5

## *Benefits to the Bay-Delta System*

While the Lower Putah Creek watershed has much of the best remaining habitat in the south Sacramento Valley, the watershed requires improvements to restore it to its full potential, including providing fish and wildlife habitat and clean water for beneficial use. This project builds on previous work in the watershed by preparing a Watershed Management Action Plan (WMAF). The WMAF will include objectives and suggested projects to further improve resources in the Lower Putah Creek watershed based on a project assessment and evaluation plan and the interests of stakeholders. This project also includes natural resource education and community outreach, facilitation and coordination of watershed groups and protection activities, long-term volunteer community stewardship, and comprehensive partnership and collaboration to ensure the success of watershed management efforts and the long-term sustainability of watershed stewardship, maintenance, and restoration.

## PROJECT OVERVIEW

The Lower Putah Creek watershed begins at Monticello Dam and ends at the confluence of Putah Creek and the Yolo Bypass. The Yolo Bypass carries Putah Creek water to the Bay-Delta. Lower Putah Creek supports a riparian corridor that links the Yolo Bypass wildlife area with contiguous natural areas that extend from Lake Berryessa to Clear Lake and into the Mendocino National Forest, forming a significant wildlife migration pathway from the north coast to the Bay-Delta. Lower Putah Creek contains critical habitat for Chinook salmon and valley elderberry longhorn beetle and provides high density nesting habitat for Swainson's hawk and other birds.

While the Lower Putah Creek watershed has much of the best remaining habitat in the south Sacramento Valley, it requires watershed improvements to restore it to its full habitat potential. Community-based restoration is needed to reverse the habitat- and water-degrading effects of dams, channelization, gravel mining, invasive plants, solid waste dumps, fish barriers, bank erosion, lack of spawning gravels, roads and bridges, and significant riparian vegetation loss from agricultural and urban development.

This project includes preparation of a project assessment and evaluation plan. The project assessment and evaluation plan will identify non-point water-pollution sources, describe baseline water quality, describe proposed measures to be implemented, evaluate effectiveness of proposed measures in preventing or reducing pollution, monitor fish and wildlife populations, measure aquatic and riparian species composition, and provide success indicators and assessment protocols for fish and wildlife population and habitat restoration. This project also encourages community support and develops community awareness of natural resources in the Lower Putah Creek watershed through the coordination and implementation of restoration and monitoring events, updating of the Putah Creek Guidebook Series, enhancement of a project website, and implementation of the Putah Creek Discovery Corridor Master Plan, which will be a resource for other community outreach projects.

Additionally, this project includes preparation of a watershed management action plan (WMA). The WMA will include objectives and suggested projects to further improve resources in the lower Putah Creek watershed based on the project assessment and evaluation plan and the interests of stakeholders.



*Local children using photo keys to identify aquatic invertebrates.*

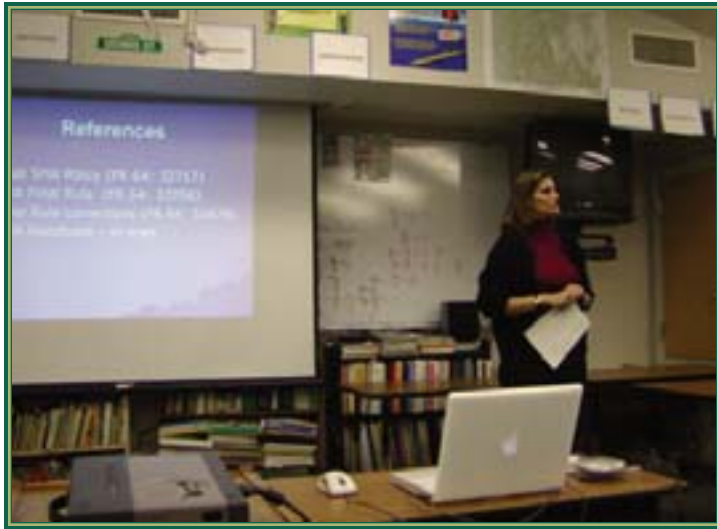
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# COTTONWOOD CREEK WATERSHED MANAGEMENT PLAN

*Cottonwood Creek Watershed Group*



*Vicky Campbell of the U.S. Fish and Wildlife Service speaking at a regular stakeholder meeting for the Safe Harbor Agreement.*

## PURPOSE

Develop a locally based management plan and supporting monitoring program to inform management of the Cottonwood Creek watershed, and improve the local capacity to implement these programs

## PROJECT GOALS

- ✧ Build on the Cottonwood Creek Watershed Group's (CCWG's) recently completed watershed assessment and other planning and monitoring efforts to develop a comprehensive watershed management plan in a science-based, adaptive management framework
- ✧ Develop long-term support of the implementation of the watershed management plan
- ✧ Provide additional support to the CCWG and its watershed coordinator

## AWARD AMOUNT

\$300,000

## WATERSHED

Cottonwood Creek Watershed

## COUNTY

Shasta and Tehama Counties

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

## *Benefits to the Bay-Delta System*

As the largest undammed tributary to the Sacramento River on the west side of the Sacramento Valley, as well as the largest contributor of salmon spawning gravels for the Upper Sacramento River, the Cottonwood Creek watershed has a significant and direct impact on the Bay-Delta. Over the last few years, CCWG has developed and mobilized a strong network of local landowners, agencies, and resource professionals who actively collaborate to provide organized stewardship of the watershed. This project builds on those successes, as well as a completed watershed assessment, to bring together agencies, organizations, and landowners who make land and resource management decisions under one comprehensive watershed management plan. Improved watershed conditions benefit local landowners; wildlife, including neotropical birds, Chinook salmon, and steelhead; and downstream water users, including those using Delta water sources.

## PROJECT OVERVIEW

Cottonwood Creek is a significant tributary to the Sacramento River, draining more than 900 square miles of Coast Range and western Sacramento Valley lands. This project builds on previous and concurrent CCWG efforts, including the completed Cottonwood Creek Watershed Assessment and the ongoing Cottonwood Creek Watershed Management Strategy. The watershed assessment documented existing available data, defined current watershed baseline conditions, recommended further studies, and identified gaps in the data record. The ongoing Cottonwood Creek Watershed Management Strategy involves workshops initiated by CCWG with agencies and stakeholders to define desired conditions in the watershed. This project continues the successful leadership of CCWG and stewardship of the Cottonwood Creek watershed.

This project develops a watershed management plan that outlines a vision for the watershed. It includes strategies for environmental management, long-term monitoring, and education. This watershed management plan will fill data gaps and incorporate technical analyses identified in the Cottonwood Creek Watershed Assessment. It recommends specific action alternatives to achieve watershed objectives outlined through the concurrent Watershed Management Strategy workshops. It enables the CCWG to systematically coordinate planned and ongoing restoration and monitoring actions throughout the watershed by various agencies and organizations, including the CCWG. As a part of this process, the CCWG will design studies and analyses to further the understanding of key watershed processes (natural and land-use-driven) identified in the Cottonwood Creek Watershed Assessment and Watershed Strategic Plan.

This project will conduct a series of plan development workshops to cover water quality and quantity; channel and riparian conditions; plant, fish, and wildlife resources; fire and fuels management; and urbanization. The workshops are advertised in the local newspaper and a quarterly newsletter. The Watershed Management Plan will contain a strategy for long-term stakeholder participation in management so that watershed management remains responsive to changing watershed conditions and issues.



*Fall-run Chinook salmon in the mainstem of Cottonwood Creek.*

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# DEER CREEK WATERSHED MANAGEMENT PLAN IMPLEMENTATION: PHASE III

Deer Creek Watershed Conservancy



*Eighth grade Chester schoolchildren learning about watershed restoration in the Lassen National Forest.*

## AWARD AMOUNT

\$457,150

## WATERSHED

Deer Creek Watershed

## COUNTY

Tehama County

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

## PURPOSE

Implement actions of the Deer Creek Management Plan's Watershed Management Strategy

## PROJECT GOALS

- ✿ Increase coordination, public outreach, and effectiveness of activities in the watershed
- ✿ Increase citizen understanding of fish ecology and water quality in the watershed
- ✿ Develop a coordinated water quality monitoring program to establish baseline conditions that can be used to assess the effectiveness of watershed restoration actions and to make better-informed watershed management decisions
- ✿ Improve conditions in the upper Deer Creek watershed to protect and enhance habitat for anadromous fish species
- ✿ Improve and expand information-sharing with other entities who address similar environmental issues in the watershed and elsewhere

## *Benefits to the Bay-Delta System*

Deer Creek is known to have significant potential for restoring populations of spring-run Chinook salmon and steelhead, and the DCWC is a cornerstone in this effort. This project will promote watershed stewardship by increasing collaboration among various stakeholders in the Deer Creek watershed, including increasing citizen understanding of fish and water quality issues, and developing a coordinated monitoring program that will help to assess effectiveness of watershed restoration actions to assist in better-informed decision-making. In addition, the information can be used by stakeholders in other watersheds who are addressing similar environmental issues. An investment in Deer Creek provides direct benefits to the creek and valuable information about how to improve overall watershed health; how to integrate local, state, federal, and private efforts into a large-scale restoration program; how to design and implement actions to benefit salmonids; and how to best manage ecological processes such as sediment transport and stream meander in a partially modified stream system.

## PROJECT OVERVIEW

The Deer Creek watershed contains important habitat for naturally reproducing stocks of anadromous fish in the Sacramento–San Joaquin River system. Conservation and improvement of habitat for these fish are priorities of the Deer Creek Watershed Conservancy (DCWC), a collaborative organization of private landowners, stakeholders, and public agency representatives. This project is rooted in several past assessment and planning efforts, including the Deer Creek Watershed Analysis, Deer Creek Watershed Plan, and the Deer Creek Watershed Management Strategy.

One of the main goals of this project is to develop and implement a surface water monitoring program to establish a baseline from which the effectiveness of watershed management and restoration activities can be assessed. A specific restoration activity of the project expands the efforts of the Lassen National Forest and the Collins Pine Company to enhance and protect habitat of anadromous fish species by treating sources of accelerated surface erosion and disrupted streamflow.

The project also extends the DCWC's outreach efforts to other organizations concerned with similar watershed issues. The DCWC will use a variety of communication tools for this outreach, including public meetings, newsletters, increased use of local and regional print media, presentations at local and regional organizational meetings, and field trips. The DCWC is also increasing their ability to share information about collaborative work in the watershed with other watershed groups, agencies, and interested stakeholders. In addition, this project expands educational programs focusing on fish ecology and water quality at local schools. The school curricula also reach the general public as students are given opportunities to present their findings from environmental education work to community groups. Furthermore, advanced students are given the opportunity to participate in an inventory, monitoring, and restoration work-study program with the Lassen National Forest.



*Upper Deer Creek Falls represents the upper limit of anadromous salmonid habitat.*

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# INTEGRATED ECOSYSTEM IMPROVEMENTS FOR SHASTA COUNTY WATERSHEDS

Western Shasta Resource Conservation District (WSRCD)



*Site for fish screen retrofit to an established irrigation ditch.*

## AWARD AMOUNT

\$821,727

## WATERSHED

Cow Creek, Stillwater Creek, and Churn Creek Watersheds

## COUNTY

Shasta County

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

## PURPOSE

Implement integrated ecosystem improvements and watershed education and outreach

## PROJECT GOALS

- ✧ Improve anadromous fish habitat and water quality in Cow Creek
- ✧ Create implementation procedure to follow for future watershed improvement projects in the Cow Creek watershed
- ✧ Increase landowner awareness of water quality and watershed issues
- ✧ Develop a watershed assessment for Stillwater and Churn Creeks to document existing conditions and to identify data gaps
- ✧ Increase community watershed group participation in the Adopt-A-Creek program
- ✧ Fund a watershed coordinator position for Stillwater Creek and Churn Creek to encourage watershed stewardship by the local community

## *Benefits to the Bay-Delta System*

This project focuses on three watersheds in western Shasta County: Cow Creek, Stillwater Creek, and Churn Creek. These watersheds and their streams drain into the Sacramento River and ultimately into the Bay-Delta system. In 2002, several streams in the Cow Creek watershed were added to the Clean Water Act, Section 303(d) listing for impaired water bodies for constituents such as fecal coliform bacteria, cadmium, copper, and zinc. This project implements a number of actions to address threats to water quality, and includes an education and outreach program for landowners who often directly influence the entry of such constituents into local streams. These improvements provide multiple benefits to water users and habitat values. These improvements will have direct benefits for stakeholders in the watershed, including local, state, and federal agencies, and for municipal and domestic water supply and irrigation.



## PROJECT OVERVIEW

The health of Shasta County watersheds is directly connected to the health of the Bay-Delta system in several ways. Physical processes occurring in Shasta County watersheds result in sediment, nutrient, and streamflow contributions to the Sacramento River. Ecological functions provided by these same watersheds support many sensitive species, including steelhead trout, Chinook salmon, native resident fish species, neotropical birds, amphibians, and invertebrates.

The Integrated Ecosystem Improvements for Shasta County Watersheds project focuses on three western Shasta County watershed areas: Cow Creek, Stillwater Creek, and Churn Creek. The Cow Creek watershed is the largest in Shasta County with approximately one-third of the watershed used for agriculture and grazing. Issues of concern in this watershed include anadromous fish habitat protection and enhancement, water quality, fire and fuel management, and seasonal flow from irrigation diversions. Building from a watershed assessment prepared in 2001, the project goals for Cow Creek include:

- ✧ construction and monitoring of a tailwater recycling pond to reduce the nutrients, temperature, and fecal coliform entering Cow Creek, and to demonstrate best management practices for collection and treatment of pasture irrigation discharge;
- ✧ design, installation, and monitoring of two irrigation diversion fish screens to prevent entrainment of juvenile salmonids;
- ✧ feasibility studies for five ditch piping projects to enhance instream flow; and
- ✧ community education and outreach to increase participation in local restoration projects.

The Stillwater Creek and the adjacent Churn Creek watersheds share similar issues; thus, they are treated as one ecological unit. The watersheds drain rural and urban land use areas. Issues of concern in these watersheds include accelerated erosion and sediment discharge from flooding, degraded aquatic habitat, invasive species such as *Arundo* and *Tamarisk* in riparian habitat, urban source pollutants, and land use conversion from rural to urban. This project establishes a community process in the Stillwater Creek and Churn Creek watersheds to develop watershed stewardship, increase local capacity for improved watershed management, and educate the community about responsibility for natural resources. In addition, the project promotes improving and increasing aquatic and terrestrial habitats and ecological functions by addressing natural sediment supply and restoration of riparian and riverine aquatic habitats.



*Metering site on irrigation ditch near Cow Creek.*

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## LAGUNA CREEK WATERSHED PROJECT

*Sacramento County Department of Water Resources, Laguna Creek Watershed Council, and Sacramento Chapter Urban Creeks Council*



*Stewardship and outreach programs in the Laguna Creek watershed target all age levels. Here, preschoolers learn firsthand about Laguna Creek and its habitat.*

### AWARD AMOUNT

\$695,741

### WATERSHED

Lower Sacramento River Watershed

### COUNTY

Sacramento County

### CALFED REGION

Sacramento Valley Region

### LEGISLATIVE DISTRICTS

US Congress: 3, State Assembly: 10 and 15, State Senate: 1

### PURPOSE

Develop a watershed management plan and support watershed education and stewardship

### PROJECT GOALS

- ✧ Assess watershed conditions and develop a balanced approach to address water quality improvement, habitat protection, flood and drainage conditions, recreation, and open space conservation in the watershed
- ✧ Prepare a watershed management plan to assess environmental conditions, identify problems and sources of pollution, and recommend prioritized projects
- ✧ Involve residents, schools, and public agencies in watershed protection and creek stewardship projects
- ✧ Support the activities of the Laguna Creek Watershed Council, including a watershed coordinator position

### *Benefits to the Bay-Delta System*

This project will benefit stakeholders in the rapidly urbanizing Laguna Creek watershed area of South Sacramento County by assessing watershed conditions and developing a watershed management plan to protect Laguna Creek's resources. This project supports coordination among government agencies, organizations, and the Watershed Council. The project will develop a watershed monitoring and assessment plan, support education and outreach to the community, and develop and implement actions to support the long-term sustainability of the Laguna Creek watershed. These efforts will pave the way to improved water quality by reducing sedimentation and runoff into the creek, and ultimately into the Sacramento River and the Bay-Delta system, benefiting users of the system statewide.

## PROJECT OVERVIEW

The Laguna Creek watershed consists of almost 50 square miles of land, draining to Laguna, Whitehouse, and Elk Grove Creeks in a rapidly urbanizing area of South Sacramento County. Laguna Creek is the last remaining stream inside the city limits of Elk Grove and Sacramento that has retained sufficient natural functions and values to provide contiguous, high-quality habitat for several threatened riparian species, as well as wildlife corridors to interconnect current and future habitat preserves.

The Laguna Creek watershed is home to more than 100,000 residents, with just over one-third of the watershed owned and/or managed by farmers and ranchers. This portion will most likely shrink as the current explosive rate of growth is expected to continue over the next 10–20 years. There is a critical need to collect environmental data, assess conditions in the watershed, and use the information in a collaborative planning approach to introduce management strategies and projects that will help mitigate impacts and avoid the irreversible damage caused by urban development on creeks in the area.

The grassroots-based Laguna Creek Watershed Council, established in late 2002, is directing the preparation of a watershed management plan in concert with education and stewardship outreach activities. The Watershed Council holds regular community meetings and conducts watershed tours and other hands-on field activities to inform and educate the community and stakeholders. This process will be used to solicit feedback on the watershed management plan as it is developed. The watershed management plan will recommend actions that address priority watershed stewardship needs.

In addition to the watershed management plan, the project will support education and monitoring efforts to provide the basis for long-term support of sustainable habitat improvements and improved water quality in the watershed. Ongoing stewardship projects will lead to an informed citizenry that continues to support and implement restoration projects and monitor the health of the watershed for generations to come.



*Sedimentation in the older channelized sections of the creek is one of many problems that will be investigated during the assessment of the Laguna Creek watershed.*

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# LAKE ALMANOR WATERSHED PLANNING AND NONPOINT SOURCE (NPS) POLLUTION CONTROL

*Plumas County Flood Control and Water Conservation District*



*Intake tower in Lake Almanor.*

## PURPOSE

Coordinate watershed management activities and water quality monitoring efforts

## PROJECT GOALS

- ✧ Organize a technical advisory committee (TAC) to guide and review watershed studies
- ✧ Facilitate stakeholder group meetings and share information among TAC participants
- ✧ Prepare a watershed assessment document and Geographic Information System (GIS) database to present information about baseline conditions of the watershed
- ✧ Enhance public awareness of water quality and watershed issues
- ✧ Compile a web-based database of water quality information
- ✧ Coordinate and supplement water quality monitoring and prepare monitoring reports
- ✧ Evaluate alternatives for septic waste collection and treatment along the East Shore of Lake Almanor

## AWARD AMOUNT

\$615,200

## WATERSHED

North Fork Feather River Watershed

## COUNTY

Plumas County

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

## *Benefits to the Bay-Delta System*

Lake Almanor drains into the North Fork of the Feather River and then flows into the Feather River's mainstem. The watershed, which is a source area for water in the Bay-Delta system, has impaired water quality, and improving the conditions of Lake Almanor will provide benefits to those who rely on the Feather River for irrigation, drinking water, and other beneficial uses. The project coordinates stakeholder efforts to develop a watershed assessment and to compile technical information that can be used to increase public awareness and evaluate alternatives to manage water quality impairments in the Lake Almanor watershed. The evaluation of septic waste collection and treatment alternatives will provide direct benefits to local residents and local government. The project provides multiple benefits to the general public and those who use the Bay-Delta as their drinking water supply by improving the drinking water quality of the Bay-Delta by reducing pathogens, nutrients, and other water quality impairments that originate in the Lake Almanor watershed.

## PROJECT OVERVIEW

Water released from Lake Almanor, located on the North Fork of the Feather River, flows to the mainstem of the Feather River and ultimately into the Sacramento River and the Bay-Delta. Water quality in portions of the North Fork Feather River watershed, including Lake Almanor, has been affected by land use activities related to timber harvesting, agricultural and livestock practices, recreation, and urban development. Lake Almanor's water quality has particularly been affected by septic system failures, which result in discharges of pathogens and organics into the lake. Previous efforts to develop a Lake Almanor Watershed Management Plan, coordinate stakeholder groups, and protect watershed resources have been unfocused. In addition, water quality monitoring by various groups has not been coordinated, and data collected from these efforts have not been compiled into a centralized database. Involvement by the Almanor Water Quality Committee and the Forest Community Research group has furthered the efforts to involve other stakeholders and define the issues and needs of the watershed.

The Plumas County Department of Public Works is creating a technical advisory committee (TAC) to create a watershed management plan to understand the water quality issues of the watershed. The TAC is comprised of participants from federal and state agencies, landowners, businesses, and other interested entities. Its function is to guide and review watershed work. The project includes facilitating stakeholder group meetings, providing technical and administrative support, and facilitating the transfer of information and products among participants. In addition, the project develops a comprehensive watershed assessment report and a Geographic Information System (GIS) database to document baseline conditions throughout the watershed and support the efforts of the TAC.

The project also will introduce a public education campaign to increase the cooperation of landowners in implementing appropriate water quality protection measures and to increase the general awareness of water quality issues and watershed function. The project compiles water quality data collected by various groups and conducts additional water quality monitoring. The project evaluates septic waste collection and treatment options to reduce discharges from septic tanks, chiefly along the east shore of Lake Almanor.



*Erosion along Highway 147 into Lake Almanor.*

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## LOWER AMERICAN RIVER ENVIRONMENTAL ENHANCEMENT

*Sacramento Area Flood Control Agency*



*Aerial view of the Gardenland Mine site, a portion of which will be restored as a part of this project.*

### AWARD AMOUNT

\$1,733,680

### WATERSHED

American River Watershed

### COUNTY

Sacramento County

### CALFED REGION

Sacramento Valley Region

### LEGISLATIVE DISTRICTS

US Congress: 5, State Assembly: 9, State Senate: 6

### PURPOSE

Broaden and strengthen local capacity for integrated management of the riparian corridor along the Lower American River

### PROJECT GOALS

- ✧ Complete an integrated management plan covering approximately 1,000 acres of riparian land in the lower 5 miles of the American River Parkway as part of the update of the 1985 American River Parkway Plan
- ✧ Restore riparian habitat on a portion of the land in the management plan area disturbed by previous mining activities and currently occupied by the Gardenland Sand and Gravel Mine
- ✧ Engage stakeholders and interested citizens in planning and restoration efforts

### *Benefits to the Bay-Delta System*

By broadening and strengthening the local capacity for managing the Lower American River, this project will benefit those communities served by the Lower American River Parkway. The American River provides approximately 15% of total Sacramento River flow to the Bay-Delta. This project benefits ecological functions, as well as water quality for beneficial uses, by directly restoring a disturbed site, reconnecting the river with a lower floodplain, and buffering urban uses from the river with restored native vegetation. This locally led effort also involves extensive stakeholder consultation and involvement in the development of an integrated management plan for the lower 5 miles of the river and provides local environmental justice benefits by reaching out to lower-income and politically underserved communities of Sacramento. Increased community awareness and support of integrated management planning will significantly contribute to the long-term sustainability of local watershed stewardship activities.

## PROJECT OVERVIEW

The Lower American River extends 23 miles from the Nimbus Dam at the base of the Sierra Nevada foothills to its confluence with the Sacramento River near downtown Sacramento. From dam to confluence, this corridor is flanked by 5,000 acres of publicly held land and is known as the American River Parkway. The Parkway sustains important populations of fish and wildlife species, including up to 25% of the Central Valley's fall-run Chinook salmon population, and offers numerous recreational opportunities, including trails and parks. Recent assessments of the Lower American River show several threats to the Parkway:

- ✧ high flood terraces of Gold Rush era mining debris are subject to mass failure during floods at the expense of riparian vegetation and levee stability,
- ✧ riparian vegetation on the terraces is too high above the water table to naturally regenerate and is shifting toward upland and invasive species,
- ✧ infrequent flooding of the high terraces provides little spawning and rearing habitat for native anadromous fish, and
- ✧ management of parkway resources is directed by the 1985 American River Parkway Plan, which does not reflect current resource knowledge and does not contain area plans for Woodlake and downstream areas of the Parkway, which were privately owned when the plan was written.

This project includes development of an integrated management plan for the lower 5 miles of the parkway that balances habitat protection and enhancement with public access and public use of the landscape, and will ultimately be included in the current update of the Parkway Plan. Development of the integrated management plan involves stakeholder outreach and education, including targeting members of the environmental justice community, and is intended to lead to a high-level of local ownership and enthusiasm for the plan, as well as increase citizens' satisfaction with and continued interest in the management of the area. To energize the planning process, the project also includes restoration of a portion of the Gardenland Mine site using innovative designs that stabilize banks while increasing habitat values.



*Stakeholders tour a restoration site along the Lower American River.*

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# PIT RESOURCE CONSERVATION DISTRICT WATERSHED MANAGEMENT PROJECT

*Pit Resource Conservation District*



*Future restoration site located on the Shaw Ranch along the mainstem Pit River upstream of the community of Lookout.*

## PURPOSE

Assist the Pit Resource Conservation District (RCD) in implementing a more comprehensive, proactive watershed management program

## PROJECT GOALS

- ✧ Develop a watershed management strategy consistent with the broader assessment and management plan under development for the Pit River watershed
- ✧ Implement demonstration restoration projects and other activities consistent with the management strategy
- ✧ Assist the Pit River Watershed Alliance in a watershed monitoring program
- ✧ Improve communication between partners and stakeholders
- ✧ Support watershed education and outreach

## AWARD AMOUNT

\$305,000

## WATERSHED

Upper Pit and Lower Pit River Watersheds

## COUNTY

Lassen and Modoc Counties

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2 and 3,  
State Senate: 1 and 4

## *Benefits to the Bay-Delta System*

The Pit River watershed, one of the state's largest systems of channels and meadows, contributes about 67% of the inflow to Lake Shasta, which provides approximately 20% of the surface-water flow to the Bay-Delta system. Portions of the Pit River are degraded, and efforts are underway to improve management practices and implement restoration projects to improve water quality, aquatic habitat, and aesthetic values. Watershed improvements implemented through this project will contribute to improved water supply reliability for downstream project users. The Shaw Ranch and Ash Creek projects affect water quality parameters positively in the Pit River watershed, preventing loss of valuable land to erosion, reducing sediment loading, minimizing nutrient loading, increasing dissolved oxygen, and decreasing water temperatures. Developing Shaw Ranch into a working site for education and outreach expands the opportunities for watershed citizens to observe good stewardship in action.

## PROJECT OVERVIEW

Sections of the Pit River are listed as impaired water bodies for temperature, dissolved oxygen, and nutrient loading as defined in the Federal Clean Water Act, Section 303(d). Sediment and turbidity in the Pit River and some of its tributaries are also believed to be at levels that impair certain beneficial uses. The Pit RCD is in the early stages of establishing a proactive, locally directed watershed management program; this project is directed at two related activities—continued support for a watershed coordinator and implementation of Shaw Ranch Riparian Restoration and the Ash Valley Stream Protection Program to improve problem areas identified in a watershed assessment.

The watershed coordinator contributes to a more proactive Pit RCD watershed management program and a more informed and involved watershed community. The coordinator also works with individual landowners to identify project opportunities and seek funding and technical assistance to implement projects.

The Shaw Ranch Riparian Restoration project is located in southwestern Modoc County. The ranch, which contains 2.5 miles of the Pit River, has been progressive in promoting sound and innovative natural resource stewardship practices, serving as a model for other ranches. Components of this project include resloping 600 feet of high, vertically eroding banks to promote floodplain access on the mainstem of the Pit River; planting native vegetation to minimize erosion and promote bank stability; installing 1 mile of fencing to contain livestock; and providing a large-scale demonstration site for education and outreach.

Ash Valley is located in Lassen County and is the hydrologic start for Ash Creek, which flows into the Pit River. The unique spring-fed Ash Creek holds vital habitat for the endangered Modoc sucker. Riparian habitat on this creek is degraded. Fencing will be installed at selected reaches of Ash Creek to reduce livestock pressure on the creek. Newly planted vegetation will develop and shade Ash Creek. Other components of the project include filtering irrigation tailwater and unifying adjacent landowners to integrate stream restoration practices that will help improve the overall water quality in Ash Creek.



*The mainstem Pit River near the confluence of Stone Coal Creek near the Stone Coal Valley.*

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## RED CLOVER CREEK/McREYNOLDS RESTORATION PROJECT

*Plumas Corporation/Feather River Coordinated Resource Management (FRCRM)*



*FRCRM staff and tour participants assess an active headcut on Red Clover Creek that is continuing the degradation in a 50-foot-wide, 15-foot-deep gully downstream.*

### PURPOSE

Restore the meadow/floodplain functions that existed in a key subwatershed of the Feather River before gullies developed

### PROJECT GOALS

- ✿ Reduce peak winter flows and increase summer base flows
- ✿ Reduce sediment delivery to downstream areas and improve water quality constituents associated with excess sediment
- ✿ Eliminate active excess erosion of gully walls
- ✿ Improve fish and wildlife habitat

### AWARD AMOUNT

\$1,101,000

### WATERSHED

North Fork Feather River Watershed

### COUNTY

Plumas County

### CALFED REGION

Sacramento Valley Region

### LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 3, State Senate: 1

### *Benefits to the Bay-Delta System*

The Red Clover Creek/McReynolds Restoration Project restores floodplain function to the Feather River watershed and the Bay-Delta system, and provides watershed, ecosystem restoration, water use efficiency, water quality, and environmental justice benefits. This project reduces sedimentation, which has been linked with declining habitat in upper watershed streams. The reduced sedimentation maintains capacity of storage reservoirs, and the restructured flows increase water use efficiency by slowing water releases in winter and increasing them in summer. The meadows that are created by plugging the gully restore soil nutrients and historical wildlife and aquatic habitat. By eliminating the gully, turbidity is lessened, improving environmental and drinking water beneficial uses. This project will develop assessment protocols through its monitoring component, and will help build capacity to manage the watershed efficiently through education and outreach activities. Collaborating in the restoration of what was once an important cultural material gathering area, the local Maidu community gains an economic base for their cultural programs.

## PROJECT OVERVIEW

The Upper Feather River watershed has approximately 400 square miles of meadow floodplain, 98% of which has become dewatered by gullied, down-cut channels that formed over the last 100 years. The down-cut channels have undermined the function of the floodplain and have accelerated the flow of water out of the watershed, adding to the natural sediment supply through bank erosion and depriving the ecosystem of nutrients formerly captured in the wet meadows.

Local and regional initiatives have determined that restoration efforts in the Red Clover Valley have the potential to significantly improve the timing of flows, erosion control, water quality, wildlife and fisheries habitat, and quality of lands for agricultural production. Red Clover Creek is the fourth highest sediment-producing subwatershed in the North Fork Feather River Basin, with 70% of its sediment derived from gully-wall erosion of the entrenched stream channel system in Red Clover Valley. The vast majority of the sediment is transported downstream, negatively affecting instream habitat, channel stability, water quality, and reservoir storage capacity.

The Red Clover/McReynolds project area is dominated by a large and expanding gully—now averaging 11 feet deep and 95 feet wide. The gully contains all floodflows, contributing to extreme depths and velocities during moderate and major floods, and acts as a flume, delivering sediment-laden peak flows downstream. This project uses a method that has been very successful in other locations in the watershed to eliminate the gully and restore floodplain function. Ponds are created by widening and deepening portions of the gully, and the remaining channel is plugged back to the original grade with the excavated material. Channel flow is directed into remnant channels at the meadow elevation. The project is designed to be self-maintaining and includes a monitoring component. Additionally, Plumas Company is working with the Maidu Cultural and Development Group and others in the vicinity to help determine the original conditions of the area and develop training for archaeological monitors.



*FRCRM partners from DFG, DWR, and Plumas Corporation collect pre-project fish population data on Red Clover Creek.*

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# SACRAMENTO RIVER WATERSHED PROGRAM (SRWP)—PROGRAM SUPPORT

*Sacramento River Watershed Program*



*"Sacramento River Oxbow" by Geoff Fricker, April 2001. TNC Collection, Chico.*

## PURPOSE

Provide a network among local and regional watershed management efforts throughout the Sacramento River watershed to improve watershed health

## PROJECT GOALS

- ✧ Conduct watershed monitoring
- ✧ Coordinate environmental education activities and conduct public outreach
- ✧ Provide assistance and support to local watershed groups

## AWARD AMOUNT

\$2,262,760

## WATERSHED

Sacramento River Watershed

## COUNTY

Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, and Yuba Counties

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 1, 2, 3, 4, and 5; State Assembly: 2, 3, 4, 7, and 10; State Senate: 1, 2, 4, and 5

## *Benefits to the Bay-Delta System*

The health of the Bay-Delta System is dependent on the rivers and streams that make up its watershed. The Sacramento River is the largest tributary to the Delta's watershed, providing about 80% of the inflow to the Delta. It is the largest riverine ecosystem in the State. Californians depend on this watershed for agriculture, drinking water, timber harvesting, hydroelectric power generation, fishing and recreation, and many other diverse and sometimes competing needs. Implementation of this project provides valuable information regarding the health of the watershed through a water quality monitoring program. It also raises awareness about the importance of watershed management through education and outreach, and assists local groups to manage their own tributary watersheds more effectively. Implementation of this project provides direct benefits to agriculture, municipal, and environmental interests, as well as recreational users of areas of the watershed and of the Delta.

## PROJECT OVERVIEW

The Sacramento River watershed encompasses more than 27,000 square miles, roughly 17% of the land area of California. The river itself is more than 400 miles long, stretching from north of Mount Shasta through the Sacramento Valley to San Francisco Bay. Its major tributaries include the Pit, Feather, Yuba, and American Rivers. The SRWP was founded in 1995 to serve as an “umbrella organization” to help coordinate local watershed efforts in the Basin. The SRWP brings together public and private stakeholders, including representatives of agricultural, environmental, industrial, and municipal interests. Using a watershed approach, the SRWP encourages these interest groups to come together in search of workable approaches to watershed management. This project focuses on three main areas (1) capacity building for watershed management efforts; (2) public outreach and education; and (3) watershed monitoring and technical support.

Capacity-building activities include establishing and maintaining relationships throughout the watershed to create successful collaboration and partnerships and to develop stronger regional and local watershed stewardship. The purpose of SRWP’s public outreach and education strategy is to promote greater understanding of what a watershed is, what constitutes watershed health, and to provide information about the Sacramento River Basin and its watersheds. Public outreach activities include implementing television public service announcements, media releases regarding watershed events, a website, exhibits at regional public events, educational workshops, and an annual stakeholders meeting. The SRWP also coordinates various K-12 environmental education activities such as the international GLOBE Program and River of Words competitions.

The third project component—watershed monitoring—has been a major component of the SRWP since its inception. The SRWP conducts water quality monitoring on the mainstem river to: (1) assess conditions throughout the watershed, including the attainment of beneficial uses and water quality standards; (2) identify and evaluate alternative management options to improve water quality in the watershed; and (3) provide information on watershed health to all stakeholders.

The SRWP provides for stakeholder input by using open subcommittees to oversee major program components and associated tasks. The subcommittees also serve as technical review and discussion groups for implementation of program plans. The four primary subcommittees include: Monitoring Subcommittee, Delta Tributaries Mercury Council, “Ag Issues” Subcommittee, and Public Outreach and Education Subcommittee.



*Art by SRWP 2003 Regional River of Words Grand Prize Winner Michelle Wurlitzer, age 14. Marsh Junior High School, Chico.*

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# STONY CREEK WATERSHED ASSESSMENT AND MONITORING PROGRAM

Glenn County Resource Conservation District



*Giant reed and salt cedar in the Stony Creek stream channel (Photo courtesy of Cindy Horney).*

## AWARD AMOUNT

\$763,200

## WATERSHED

Stony Creek Watershed

## COUNTY

Glenn, Colusa, and Tehama Counties

## CALFED REGION

Sacramento Valley Region

## LEGISLATIVE DISTRICTS

US Congress: 2, State Assembly: 2, State Senate: 4

## PURPOSE

Establish and implement a locally directed watershed management program for the Stony Creek watershed

## PROJECT GOALS

- ✧ Establish an active and locally directed watershed-wide management program
- ✧ Complete a comprehensive watershed assessment that will guide the management program
- ✧ Implement a watershed monitoring program to track long-term watershed conditions and trends
- ✧ Demonstrate applications of innovative mapping, eradication, and restoration techniques for managing giant reed and tamarisk

## *Benefits to the Bay-Delta System*

Numerous studies and assessments have been performed in the Stony Creek watershed area. However, none of these efforts has addressed the watershed as a whole. The Stony Creek Watershed Assessment will examine all existing information and consider the watershed as a whole, providing a basis for improved local watershed planning and management. The monitoring portion of this project focuses on creek characteristics directly related to the watershed's impacts on the Sacramento River and Bay-Delta system, such as flow, water quality, channel morphology, and aquatic/riparian habitat conditions. Ultimately, this effort will lead to a watershed restoration strategy that provides a wide range of benefits, including reduced erosion; reduced sediment transport; improved hydrologic conditions; reduced populations of giant reed and tamarisk with corresponding reduction in propagule load transported to the Sacramento River; restored riparian corridors and associated linkages for wildlife; and improved landowner management practices. Landowners will benefit from the project, as will recreational users of the watershed.

## PROJECT OVERVIEW

The Stony Creek watershed is approximately 780 square miles of public and private lands in Glenn, Colusa, and Tehama Counties. It is the second largest tributary on the west side of the Sacramento River and provides habitat to many aquatic and terrestrial species. Land and water management activities, particularly in the lower reach, have resulted in degraded riparian habitat and altered streamflows and have accelerated stream bank erosion, excess sediment transport to the Sacramento River, and the establishment of significant giant reed and salt cedar populations.

This project builds on a previous CALFED Watershed Program grant that allowed the Glenn County Resource Conservation District (GCRCD) to hire a watershed coordinator to bring together individuals from various backgrounds to outline a watershed management strategy and initiate a community capacity-building process. Through this project, the GCRCD and the watershed coordinator will lead the establishment and implementation of a locally directed watershed management program for the Stony Creek watershed. This program is a multi-stakeholder effort and includes the following elements:

- ✧ The Stony Creek Watershed Assessment will be the basis for ecosystem planning and management and is necessary to initiate coordinated efforts to rehabilitate key segments of the watershed. The assessment process will characterize current and reference conditions and data needs. It will serve as an educational tool and platform for continuing the consensus-building process with landowners, agencies, and other stakeholders of the watershed.
- ✧ The monitoring program element is designed to monitor watershed conditions and track long-term trends. It will evaluate the effectiveness of watershed management actions, such as changes in land management practices, changes in reservoir release operations, and on-the-ground restoration projects.
- ✧ The eradication and restoration element establishes a demonstration site to examine existing technologies and develop strategies tailored to control nonnative invasive plants and establish native riparian habitats. This effort also engages local farmers and businesses in ecological restoration, demonstrating the cost-effectiveness of these techniques for future projects.
- ✧ A digital mapping effort will identify and plot nonnative, invasive giant reed colonies along the upper 10 miles of Lower Stony Creek. This task will provide the GCRCD and landowners with specific data on the total quantity of giant reed in the riparian area, and estimates of its rate of spread over a 12-month period. This information will be used to prioritize giant reed colonies for removal and to estimate restoration costs.



*Herd of Elk near the Snowy Mountain Wilderness (Photo courtesy of Dennis Nay).*

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# TEHAMA WEST WATERSHED MANAGEMENT PROGRAM

*Tehama County Resource Conservation District (TCRCD)*



*Heavy infestation of Arundo donax along Burch Creek.*

**AWARD AMOUNT**  
\$385,775

**WATERSHED**  
Westside Tehama County Watersheds

**COUNTY**  
Tehama County

**CALFED REGION**  
Sacramento Valley Region

**LEGISLATIVE DISTRICTS**  
US Congress: 2, State Assembly: 2, State Senate: 4

## PURPOSE

Collect needed watershed condition data, create a watershed management plan, and increase the involvement of citizens in the conservation of natural resources

## PROJECT GOALS

- ✧ Describe baseline watershed conditions in Western Tehama County
- ✧ Establish a monitoring program
- ✧ Continue education of and outreach to landowners by providing natural resources workshops on best management practices
- ✧ Continue restoration and education activities to increase community and landowner participation in support of the TCRCD mission to assist citizens with managing, conserving and improving the natural resources of Tehama County

## *Benefits to the Bay-Delta System*

The creeks in the Tehama West watershed flow from the east slopes of the coast range to the Sacramento River below Red Bluff Diversion Dam. This project takes the efforts of the Tehama West Watershed Assessment to the next level through data collection and development of a watershed management plan. This project recognizes the need to monitor baseline watershed conditions in Western Tehama County, and create a comprehensive management plan to guide the direction of land management and restoration activities beyond the time frame of the project itself. Local landowners will benefit directly from the improved conditions on their land and from the data collected there. Standard and accepted monitoring protocols will be used for the baseline data collection, resulting in data that can be shared across watersheds for comparison purposes. The added data will benefit larger management and ecosystem improvement projects in the upper Sacramento River basin. Improved conditions in the upper basin will help achieve the goals of CALFED and other management efforts such as the Sacramento River Watershed Program.

## PROJECT OVERVIEW

The creeks in western Tehama County watersheds flow from the east slopes of the coast range to the Sacramento River below Red Bluff Diversion Dam. They range in elevation from 200 feet at the valley floor to 8,092 feet at the crest of the Yolla Bolly Wilderness area. The westside Tehama County watersheds have complex natural resource issues and a diverse variety of ecosystems and land uses. In addition, the westside watersheds contain one of the largest concentrations of vernal pool habitat areas remaining in California. The Tehama County Resource Conservation District (TCRCD) is implementing the West Watershed Management Project, which integrates a number of aspects of environmental stewardship into a well-rounded project for long-term results.

Building on the soon-to-be-completed Tehama Westside Watershed Assessment, this project will continue the TCRCD effort to define watershed condition and management goals while implementing restoration and educational activities. TCRCD will conduct "how to" workshops on best management practices for local landowners and will assist with the creation of individual monitoring plans for landowners. TCRCD will also expand the book *Nature's Nursery: A Guide to the Beneficial Plants of Tehama County* to include twenty additional local native plants. Each new plant entry will have a color picture, and each description will include habitat types, growth characteristics, leaf characteristics, wildlife and livestock uses, propagation, and the plant's benefits. A key outcome of the outreach and education program is to communicate to landowners the important connection between the health and productivity of their lands and the health of the surrounding watersheds and natural resources.

TCRCD also uses the education and outreach program to facilitate the participation of stakeholders in preparing a watershed management plan. The plan will guide restoration, research, and management decisions in the Tehama West watershed. Although the watershed management plan will identify and prioritize restoration efforts, some priority restoration projects have already been identified. TCRCD is funding some demonstration restoration projects including removing *Arundo donax* and *Tamarisk*, fencing cattle out of waterways, and planting native vegetation to restore riparian corridors.

TCRCD works with a Technical Advisory Committee (TAC) to develop a meaningful monitoring plan for Red Bank, Reeds, Elder, and Thomes Creeks. The TAC concluded that collecting watershed condition data, including socioeconomic parameters, would be emphasized in the monitoring plan.



*Portion of Jewett Creek where Arundo donax eradication has been maintained.*

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